

Studies in Australian Myrsinaceae: *Tapeinosperma* Hook.f.

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Summary

Jackes B.R. (2005). Studies in Australian Myrsinaceae: *Tapeinosperma* Hook.f. *Austrobaileya* 7(1): 99–110. In Australia, there are three species recognised in the genus *Tapeinosperma*. One new species *T. pallidum* Jackes is from North Queensland and one new combination and reinstatement, *T. repandulum* (F.Muell.) Jackes, is a species that occurs in southern Queensland and northern New South Wales. Descriptions, an identification key, illustrations and distribution maps are provided for each species.

Key Words: Myrsinaceae, *Tapeinosperma*, *Tapeinosperma pallidum*, *Tapeinosperma repandulum*, Australian flora.

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Introduction

Currently in the genus *Tapeinosperma* Hook.f. more than 60 species are recognised. However, Pipoly and Takeuchi (2004) estimate that there are about 100 species with many undescribed. The distribution of described species ranges from Indonesia east to Fiji and south to Australia and New Caledonia, with more than half of the species occurring in the latter area. Although species have been described for the Philippines these have all been transferred to *Ardisia* Sw. (Stone 1989).

In Australia, two species now placed in the genus *Tapeinosperma* were initially recognised and described as belonging to the genus *Ardisia*. In 1902, Mez combined these two species (*A. pseudojambosa* F.Muell. and *A. repandulam* F.Muell.) and transferred them to *Tapeinosperma* as *T. pseudojambosa*. In addition, he transferred the species described as *Embelia flückigeri* F.Muell., to *Tapeinosperma*. Reynolds (1991) when undertaking a revision of *Embelia* considered that Mez was correct in transferring *E. flückigeri* to *Tapeinosperma*. However, this species, which is known only from the type collection, does not fit the genus as currently circumscribed. The flowers are unisexual rather than bisexual and the stamens are free from the corolla or almost, rather than the upper portion only being free. As noted by Smith (1973) and Sleumer (1988) *Tapeinosperma* is difficult to distinguish from a number of other genera in the

Myrsinaceae unless the material is flowering. In New Guinea, vegetative specimens can be easily confused with *Ardisia*, *Discocalyx* Mez, *Fittingia* Mez and *Loheria* Merr. Both *Ardisia* and *Tapeinosperma* have bisexual flowers rather than the unisexual flowers found in the other genera; however, flowers in *Discocalyx* may appear bisexual at times when the aborted organs are still reasonably well-developed. Hence the only reliable character separating all the species in these three genera, is the nature of the filament. In *Tapeinosperma* the apical portion is ligulate and free from the corolla; in *Discocalyx* it is absent or fused to the corolla (Smith 1973), but in *Ardisia* the filaments are free or only fused at the base to form a minute tube which is adnate to the corolla or the anthers are sessile or almost so. In addition, *Tapeinosperma* can be distinguished from *Ardisia* by the ovules being uniseriate rather than multiseriate as found in most species of *Ardisia*; however, this distinction is not clear cut for Australian species of *Ardisia*. In most non-Australian species of *Tapeinosperma* the stigma is obvious, however in the three Australian species the stigma is punctiform and similar to *Ardisia* stigmas. Species belonging to these two genera in Australia can be readily distinguished by the nature of the inflorescence and the shape of the corolla.

In Australia, the species of *Tapeinosperma* are distinguished from all other species of Myrsinaceae by the following combination of characters: inflorescence

paniculate; flowers bisexual; corolla fused at the base to form a tube; staminal filaments short but upper portion free and ligulate; ovules uniseriate, style slender with a punctiform stigma and fruit 1-seeded (many-seeded in *Maesa* which is now in a separate family Maesaceae (Anderberg *et al.* 2000)).

Materials and Methods

This study was based on an examination of morphological characters derived from herbarium material as well as some fresh material. Herbarium specimens examined were from the following Herbaria: BRI, CANB, K, L, MEL, MO, NSW, QRS. All measurements were based on dried material although some flowers were reconstituted in boiling water prior to examination. Secretory structures of a schizogenous origin are present in the various organs and were observed both with a hand lens and under a microscope. These structures which are referred to here as glands, vary in shape and colour between species but appear to be constant within a species. In thicker leaves the pellucid glands may appear orange-coloured or reddish if neighbouring cells are damaged, as by insects. These cells are not to be confused with the small globular deep red glands which only occur in one species (*T. pseudojambosa*). A detailed description of these structures is given in Otegui *et al.* (1998) and Jackes (2005). Areole terminology is as described by Hickey (1973). Trichomes were examined by light microscopy and the basic structure confirmed by SEM. Three types were recorded: uniseriate 2–3 celled; capitate ‘scales’ sunken into the surrounding epidermis (**Fig. 1b**), (although not tested, some of these appeared to be secretory and were similar in appearance to those recorded by Blüthen and Reifenrath (2003) for *Ardisia pachyrrachis* (F.Muell.) F.M.Bailey, as extrafloral nectaries); stalked glandular papillae are present on the margins of the anthers and particularly towards the apex (**Fig. 1a**).

Taxonomy

Tapeinosperma Hook.f. in Benth. & Hook.f., *Gen. Pl.* 2:647 (1876). **Lectotype:** *Tapeinosperma vieillardii* Hook.f. (Sleumer 1988).

Derivation of name: From the Greek *tapeinos* - low or humble, and *sperma* - seed, referring to the small seed.

Shrubs or small trees, branches glabrous or occasionally a few uniseriate hairs present when young; leaf scars usually obvious, on older branches lenticels often prominent; terminal buds may bear flat capitate scales. Leaves simple, alternate, subopposite to opposite, often crowded towards the ends of branches thus appearing pseudowhorled; shortly petiolate; lamina in Australian species, chiefly oblanceolate to obovate; glabrous or with flat capitate scales scattered on the abaxial surface; adaxial surface often glossy green, abaxial surface paler, chartaceous to coriaceous; apex acuminate, base cuneate, margins entire, undulate, crenulate to irregularly serrulate; venation obvious, lateral veins often numerous and curving in from the margin; glands globular, irregularly rounded to lineate, pellucid, or red to dark red drying black, some small globular red glands may be present; for Australian species, the number of glands per areole lacking veinlets varies from 1–8, to 25 in areoles with veinlets. Inflorescence paniculate, (in non-Australian species the panicle is sometimes congested) terminal or arising from the axils of the uppermost leaves; branches usually reddish, subtended by chartaceous, usually caducous bracts; pedicel subtended by small caducous bracts; glands present. Flowers bisexual, 5-merous, variants occasionally recorded; glands irregularly rounded and/or lineate. Calyx deeply divided, cupuliform, in non-Australian species may be rotate or occasionally clavate, lobes thick, margins imbricate in bud, glands present, pellucid to dark red to black. Corolla urceolate, in some non-Australian species campanulate or tubular, lobes may be shorter than, equal to or longer than the tube, apex rounded, glands if present globose or shortly lineate, pellucid, dark red to black. Stamens: filaments fused at base, adnate to the corolla-tube at base, free and ligulate distally; anthers oblong-deltoid, apiculate, dorsifixed, longitudinally dehiscent, introrse, glandular papillae present; pollen tricolporate, exine reticulate. Ovary ovoid or occasionally obturbinate, flat capitate scales may be present; style slender elongating after anthesis; stigma small and discoid or punctiform. Ovules 2–12, borne in shallow grooves on the outside of the ovoid placenta or, as in Australian species embedded. Drupe globular to depressed globular, reddish, exocarp thin, fleshy when fresh, numerous glands present, endocarp

crustaceous smooth or angled, glands present; style usually persistent but often broken. Seed one, shape various, embryo transverse, thin, curved, cotyledons elongated slender, endosperm ruminant or not.

About 60 species are currently recognised in the genus, chiefly from the New Guinea region, Australia, New Caledonia and eastwards to Fiji. The genus has been confused with both *Discocalyx* and *Ardisia*. It may be readily separated from *Discocalyx* by the presence of bisexual flowers; stamens basally adnate to the corolla tube, but distally free and anthers are dorsifixed rather than anthers appearing almost sessile on the corolla tube; and the long slender style. In *Ardisia* the staminal filaments are free or basally connate into a minute tube adnate to the corolla or in most of the Australian species the anthers are sessile or almost so. The inflorescence in Australian species of *Tapeinosperma* is paniculate and not umbellate or congested as in *Ardisia* and the corolla is urceolate with the lobes erect or weakly spreading at maturity as against the corolla

being campanulate or rotate with widely spreading lobes.

The genus consisting of three endemic Australian species extends from North Queensland (c. 15°S) along the eastern coastline to northern New South Wales (c. 28°S). A fourth species known only from the type collection, which has been placed in both *Embelia* and *Tapeinosperma* is now considered to be more closely related to *Embelia*, because of the presence of unisexual flowers, stamens free or scarcely adnate to the corolla and the general pubescence. Additional specimens are required before it can be definitely assigned to an existing genus.

Flowers in the Australian species appear to be protogynous. The style and stigma protrude from the urceolate corolla prior to anther dehiscence and prior to the corolla lobes becoming erect or even slightly spreading. No pollen was observed on the style and stigma at this stage.

Key to species of *Tapeinosperma*

1. Calyx and corolla with pellucid glands only. Leaf lamina with pellucid glands only, (4–)6–8 per areole lacking veinlets, to 25 in areoles with veinlets **1. *T. pallidum***
- Calyx and corolla with prominent orange to dark red to almost black glands.
Leaf lamina with pellucid glands only, or pellucid and red to dark red glands, 1–6 per areole or up to 10 in areoles with veinlets **2**
2. Corolla with orange and dark-coloured glands, the latter chiefly irregularly globose, randomly distributed. Leaf lamina with scattered small globular red to dark red glands, may be sparse; lineate pellucid glands with a length:width ratio up to 4:1 rarely more, 1–4 per areole **2. *T. pseudojambosa***
- Corolla with very dark-coloured glands, chiefly lineate, restricted to the median area. Leaf lamina lacking the small globular red glands; lineate pellucid glands with a length: width ratio of 2:1 or less, 2–6 per areole lacking veinlets, up to 10 in areoles with veinlets. **3. *T. repandulum***

1. *Tapeinosperma pallidum* Jackes sp. nov.

A *T. pseudojambosa* in lamina folii absentia glandium rubrarum, a *T. repandulo* in lamina folii praesentia glandium magnarum lineatarum pellucidarum ratione (longitudo:latitudo)

quam 3:1 majore et aliquot usque 10:1 (in illo non majus quam 2:1) et ab ambobus absentia glandium rubrarum atratarumve in corolla distinguatur. **Typus:** Queensland. NORTH KENNEDY DISTRICT: Keough's scrub, Portion 53V, Herberton, 17°30'S, 145°28'E, 20 November 1973, B.P. Hyland 7111 (holo:

QRS34393; iso: QRS34394, BRI, CANB, NSW).

Tapeinosperma sp. (Cedar Bay J.G.Tracey 14780) in Henderson (2002).

Shrub or small tree 2–9 m tall, often much-branched; outer bark smooth, brownish, blaze pale pink with darker stripes, branchlets pale, rarely reddish, usually angular with ridges extending down from the base of the petiole, leaf scars obvious; scales occasionally present on terminal bud. Leaves alternate to pseudowhorled: petiole 0.5–3(–4) mm long; lamina oblanceolate, obovate, rarely tapering abruptly to the apex, 4–15.8(–18) cm long, 1.2–4.2(–5.6) cm wide, glabrous, scattered pale-coloured scales may be present on abaxial surface, adaxial surface glossy green, abaxial surface paler, chartaceous; apex acuminate, base cuneate, margins undulate, entire or irregularly serrulate to crenulate, midrib depressed on adaxial surface, prominently raised on abaxial surface, 18–25 pairs of lateral veins on either side of the midrib, looping near the margins. Glands, usually about 6–8 per areole lacking veinlets, up to *c.* 25 in an areole with veinlets; chiefly irregularly globular and shortly lineate with a length:width ratio of 3:1, but some lineate with a length:width ratio up to 10:1 also occur, particularly near the midrib, pellucid. Panicle 4–20 cm long, 4–8(–12) cm wide, branches reddish, 5–11 primary branches, the subtending bracts chartaceous, to 25 mm long, often prominent particularly towards the base, glands pellucid; panicle usually increases in size as fruit develop. Pedicels (2–)5–10 mm long, usually reddish, often curving and lengthening after anthesis, glands pellucid, bracts to 2 mm long, capitate scales occasionally present. Flowers 2.5–3(–4) mm long, glands pellucid. Calyx cupuliform, green, tube 0.25–0.5 mm long, lobes triangular 1–1.5 mm long, *c.* 0.75 mm wide at base, often spreading, glands pellucid. Corolla urceolate, white, creamy green to pink, tube 1.5–2(–3) mm long, lobes 0.5–1 mm long, *c.* 0.75 mm wide at base, lobes often slightly spreading, glands pellucid. Stamens: filaments ligulate, 0.5–1 mm long, some glandular hairs may be present; anthers 1.5–2 mm long, deltoid, apiculate, some pale-coloured glandular papillae towards apex. Ovary globular to obturbinate 0.7–1 mm long, capitate scales present; style 2–3 mm long, elongates after anthesis, stigma punctiform,

glands pellucid. Ovules 4 or 5. Fruit globular to depressed-globular, sometimes ribbed, 5–8 mm long, 6–8 mm wide, red; style persistent. **Fig. 1, 2, 5A, 6A.**

Selected specimens examined: Queensland. COOK DISTRICT: S.F.R.185, Danbulla, 17° 06'S, 145° 36'E, Apr 1992, *Cooper & Cooper WWC238* (QRS); S.F.R. 143, Windmill Creek, 16° 34'S, 145° 15'E, Nov 1997, *Cooper & Cooper WWC1172* (QRS); Mt Demi, 2 miles [3.2 km] SW of Mossman, Nov 1944, *Flecker NQNC9017* (QRS); Herberton Range, tributary of Rocky Creek, 17° 14'S, 145° 25'E, Dec 1996, *Ford 1836* (BRI, NSW, QRS); N.P.R. 904, Wooroonooran, Coolamon Creek, *c.* 700 m S of Towalla Mine, site 34, 17° 28'S, 145° 44'E, Oct 2001, *Ford 3049, Holmes & Cooper* (BRI, NSW, QRS); Davies Creek L.A., S.F. 607, 14.2 km past Davies Creek Falls, 17° 04'S, 145° 36'E, Mar 1988, *Forster PIF3888* (BRI, DNA); Daintree N.P., Mt Sorrow track before razorback, 2.5 km W of Cape Tribulation, 16° 04'S, 145° 27'E, Dec 1997, *Forster PIF21975, Booth, Jago & Jensen* (BRI, K, MEL, NSW, QRS); S.F.R. 185, Danbulla, Breach L.A. 17° 05'S, 145° 38'E, Dec 1991, *Gray 5364* (QRS); F.R. 194, Atherton District, Mar 1962, *Hyland AFO/2787* (BRI); Mt Lewis road near the CSIRO plot, 16° 31'S, 145° 15'E, Nov 2001, *Jago 6060 & Worboys* (BRI); Johnstone River, 1915 *Michael 25* (BRI); Downfall Creek area near northern shore of Tinaroo Falls Dam, 17° 09'S, 145° 35'E, Sept 1972, *Moriarty 1139* (CANB, NSW, QRS); Cedar Bay, 15° 49'S, 145° 20'E, Oct 1972, *Tracey 14780* (BRI); Mt Finnegan, S of Cooktown 15° 47'S, 145° 17'E, Aug 1972, *Webb & Tracey 10856* (BRI, K); Malanda, Jan 1918, *White s.n.* (BRI [AQ91814]). NORTH KENNEDY DISTRICT: Bridge K10, Douglas Creek, Kirrama, 18° 13'S, 145° 53'E, Nov 1997, *Cooper & Cooper WWC1172* (QRS); Murray River, Rockingham Bay, Nov 1869, *Dallachy s.n.* (MEL1612793); Kirrama Range S.F. 344, *c.* 38 km NW Kennedy, 18° 01'S, 145° 36'E, Nov 1989, *Fell DGF2000* (BISH, BRI, CANB, MEL, QRS); Mt Fox, Dec 1954, *Volck AFO950* (QRS).

Distribution and habitat: This species is usually found in the rainforests of northern Queensland particularly in complex mesophyll vineforest, although it does occur in drier situations on a variety of soil types. It extends from the Cooktown area *c.* 15° 30'S south to the Ingham area *c.* 18° 30'S (**Map 1**). Altitudinal range is from 300 to 1100 m.

Phenology: Flowering occurs in spring and early summer, with a peak in November to December. Fruits have been collected from November through to September.

Notes: This north Queensland species is easily distinguished when flowering as it is the only species where there are no red or dark-coloured glands present in the calyx and corolla. The often conspicuous bracts subtending inflorescence branches and the pedicels have pellucid glands

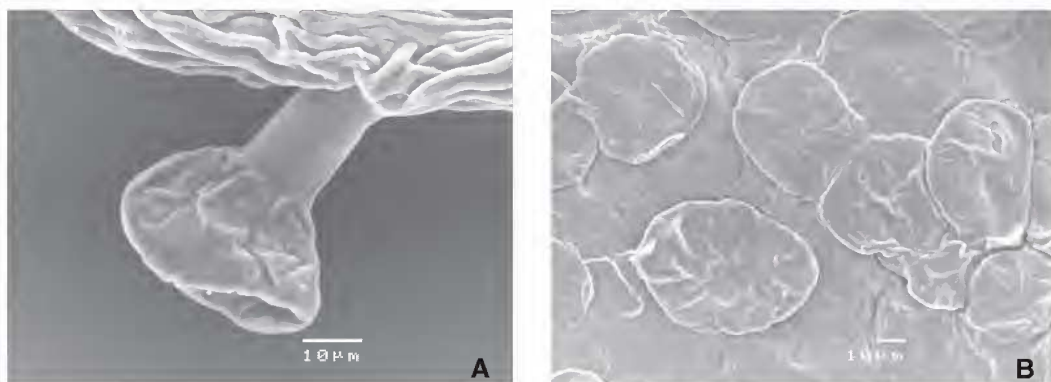


Fig. 1. *Tapeinosperma pallidum*. A. glandular papilla on anther. B. capitate scale on ovary. All from Cooper & Cooper WWC1172 (QRS). Scale bar = 10µm

only, unlike *T. repandulum* where the bracts are much smaller and have dark lineate glands, the bracts in *T. pseudojambosa* are very early caducous. In vegetative specimens, the absence of red globular glands in the leaves separates it from *T. pseudojambosa*. The number of glands per areole, (4–)6–8 in areoles lacking veinlets and up to 25 where veinlets are present in the areoles, will usually readily separate this species from both *T. pseudojambosa* and *T. repandulum* where there are fewer glands per areole, the latter species only occurs in southern Queensland and northern New South Wales. However, the latter is readily separated on the length:width ratio of the lineate pellucid glands which rarely exceed 2:1 compared to *T. pallidum* where many exceed 3:1 and usually some much longer ones occur with a ratio of up to 10:1.

Although usually an erect, much branched shrub or small tree, there are a number of records of the main stem lying horizontally with branches arising vertically.

Etymology: From the Latin *pallidus* – pale, referring to the pale-coloured flowers where only pellucid glands are present in the calyx and corolla.

2. *Tapeinosperma pseudojambosa* (F.Muell.) Mez in Engler, *Pflanzenr.* 1(IV: 236): 170 (1902).

Ardisia pseudojambosa F.Muell., *Fragm.* 4:81 (1864). **Type:** Queensland. NORTH KENNEDY DISTRICT: Mt Elliot, *Fitzalan* (lecto [here chosen]: MEL1612779; isolecto: MEL1612768).

Shrubs or small trees 1–12 m tall, trunk slender, bark smooth, nondescript to mottled greyish-brown, lenticellate, blaze cream to pinkish-red; branchlets reddish with small ridges extending down from base of the petiole. Leaves alternate to subopposite, petiole reddish, 1–6 mm long, often thickened, small flange may be present. Lamina broadly obovate, usually abruptly tapering to acuminate apex, 7–17.3 cm long, 2.2–6.5 cm wide, glabrous or with rufous-coloured, capitate scales on abaxial surface, chartaceous; margins undulate, entire or crenulate, midrib depressed on adaxial surface, prominently raised on the abaxial surface; >23 lateral veins on either side of the midrib; glands 1–4 per areole rarely more; globular to shortly lineate pellucid with a length:width ratio up to 4:1, rarely pellucid glands absent, scattered small globular red glands present, distribution and density variable. Panicle 3–10 cm long, 3–11 cm wide, enlarging as fruit develops, 4–10 primary branches, reddish, the subtending bracts very soon caducous, rarely present at maturity; pedicels 4–7 mm long at anthesis, often curving so flowers appear pendulous, glands obvious dark red, bracts caducous c. 1 mm long. Flowers 3–4 mm long, 5-merous, occasional 6-merous, dark-coloured glands prominent on calyx, corolla and style, pellucid glands sometimes present. Calyx cupuliform, tube 0.25–0.5 mm long, lobes triangular 1–1.5 mm long, c. 1 mm wide at base, glands prominent, orange to dark red. Corolla urceolate, creamy-green, white, cream to pale pink, tube 1.5–3 mm long, lobes triangular 0.5–1.5 mm long, c. 1 mm wide at base; orange to dark red glands prominent on lobes, appearing verrucose, some pellucid glands may



Fig. 2. *Tapeinosperma pallidum*. Scan of Cooper & Cooper WWC1172 (QRS).

be present on tube. Stamens: filaments thick, ligulate, 0.5–1 mm long; anthers 2–2.5 mm long, deltoid, apiculate, glandular rufous-coloured papillae present. Ovary conical to depressed-globular, 1–1.5 mm wide, c. 1 mm high, scattered rufous-coloured capitate scales present, style 2–3(–5) mm long elongating after anthesis, glands red, stigma punctiform. Ovules 6 or 7. Fruit depressed-globular 6–7 mm long, 7–8 mm diam., dark pink to red, glands black when dry, style persistent. **Fig. 3, 5B, 6B.**

Selected specimens examined: Queensland. NORTH KENNEDY DISTRICT: Dugong Inlet, Whitsunday Is, 20° 05'S, 148° 57'E, Sept 1990, *Batianoff 900991A* (BISH, BRI, LAE); near South Pinnacle, 25 km SW of Townsville, 19° 24'S, 146° 38'E, Sept 1992, *Bean 5053* (BRI); Bluewater Range, WNW of Townsville, 19° 13'S, 146° 24'E, Nov 1996, *Cumming 15306* (BRI); S.F.R. 344, Kirrama road c. 1 km NNW of Mt Collins, site 62, 18° 10'S, 42° 18'E, Jun 2002, *Ford 3494 & Holmes* (BRI, QRS); Mt Dryander S.F. Dryander Creek, left branch, 20° 16'S, 148° 34'E, Oct 1999, *Forster PIF25000 & Booth* (BRI, DNA, K, L, MEL, QRS); Strathdiekie, near Proserpine, 20° 25'S, 148° 35'E, *Michael 1116* (BRI); Dryander Creek, c. 2 km N of Gregory and c. 20 km N of Proserpine, 20° 24'S, 148° 35'E, Nov 1985, *Sharpe 4173* (BRI, CANB, K). SOUTH KENNEDY DISTRICT: T.R. 179, Kalvin, 6 km W of Koumala, 21° 36'S, 149° 11'E, Apr 1991, *Forster PIF8033 & McDonald* (BRI, K, MEL, QRS); Mt Beatrice N.P. northern tributary of Catherine Creek, 21° 52'S, 148° 40'E, Jul 1993, *Forster PIF13393 & Tucker* (BRI, QRS); Eungella N.P. Broken River Circuit Track, 20° 55'S, 148° 35'E, Mar 1990, *Pearson 213* (BRI); Massey Creek, Eungella Range, Oct 1951, *Smith 4780* (BRI); Cathu S.F. 20° 50'S, 148° 35'E, Nov 1981, *Young 438* (BRI). LEICHHARDT DISTRICT: On ranges south west from Sarina, May 1927, *Francis s.n.* (BRI [AQ91823]). Port Curtis District: Fitzroy River, Jun 1865, *Bowman s.n.* (MEL1612762); Rockhampton, Jan 1862, *Dallachy 111* (MEL); Rockhampton, Oct 1865, *Dietrich 1501* (MEL); Colosseum Creek, T.R. 115, Many Peaks Range, 24° 23'S, 151° 27'E, Jan 1994, *Forster PIF14635* (BRI, MEL, QRS); Granite Creek, Bulburin S.F. 24° 33'S, 151° 31'E, Dec 1982, *Guymer 1819 & Dillewaard* (BRI, CANB); Shoalwater Bay Training Area, site SW07, Polygon range, E of Mt Mulgrave, 20° 37'S, 150° 17'E, Sep 1994, *McDonald 5748 & Tweedie* (BRI); Rockhampton, *Thozet 14* (MEL); Jeffrey's property "Shirley", Agnes Waters road, turn left at Bindaree then left at Jeffrey's road, 24° 18'S, 151° 36'E, Oct 1998, *Worthington 1937* (BRI).

Distribution and habitat: This species is found chiefly in rainforest on drier sites or along creeks growing on a variety of substrates. It is frequently found as an understorey shrub growing in association with *Argyrodendron* spp. as canopy emergents and species of *Gossia*.

It extends from west of Cardwell on the drier side of the Cardwell Range (c. 18°S) south to Bulburin State Forest area (24° 33'S) (**Map 2**). Altitudinal range is from 70–600 m.

Phenology: Flowers from August to February with a peak from September to early November. Fruits have been collected from November to May. The period from fertilisation to maturation is approximately two months, but fruit may remain attached for longer periods.

Notes: This species is easily distinguished from the other two species by the presence of small globular red to dark red glands scattered throughout the leaf lamina, often at least one per areole; however, in some specimens they are sparse and in thick leaves they may be difficult to find. Most areoles are simple and lack veinlets, and there are 1–4(–6) glands per areole. The number of glands per areole combined with the small globular red glands can be used to identify sterile specimens of this species. The obovate leaves abruptly tapering to the apex are more common in this species than in the others. It is the only species where the orange to dark-coloured glands are randomly distributed throughout the petals.

Etymology: From the Latin *pseudo* - false, and the genus *Jambosa* Adans., a synonym of *Syzygium* indicating that it is similar in appearance to certain species of *Syzygium*.

3. *Tapeinosperma repandulum* (F.Muell.) Jackes
comb. nov.; *Ardisia repandula* F.Muell.
Fragm. 4: 82 (1864). **Type:** New South Wales. NORTH COAST DISTRICT: Richmond River, *C. Moore*. (lecto [here chosen]: MEL654527).

Tapeinosperma sp. (Woombye A.R. Bean 994) in Henderson (2002).

Shrubs or small trees 1.5–5 m tall, crown often sparse and open; branchlets angular, may be winged, reddish, leaf scars present, terminal buds with small capitate scales. Leaves alternate, subopposite to opposite, often in pseudowhorls; petiole reddish, 2–4 mm long, margins often with a small wing that continues down the stem; lamina lanceolate to oblanceolate rarely obovate, tapering to the apex 7.8–19.3 cm long, 2.3–5.6 cm wide, glabrous or pale capitate scales sparse, adaxial surface

QUEENSLAND HERBARIUM (BRI)
Flora of Queensland
Tapeinosperma pseudojambosa (F. Muell.) Mez
Coll. A.R. Bean 5053 27 SEP 1992

19°24'S 146°38'E Alt. 600 m.
Depth m.
Near South Pinnacle, 25km SW of Townsville.
In rainforest gully with *Baloghia*, *Archontophoenix*,
Coveniella.
Shrub 3 metres high.
Flowers white.

Det. Myrsinaceae
Dupe.
May be cited as computerised collection number AQ 549144
(Archival Paper)

QUEENSLAND HERBARIUM (BRI)
Brisbane Australia
AQ 549144

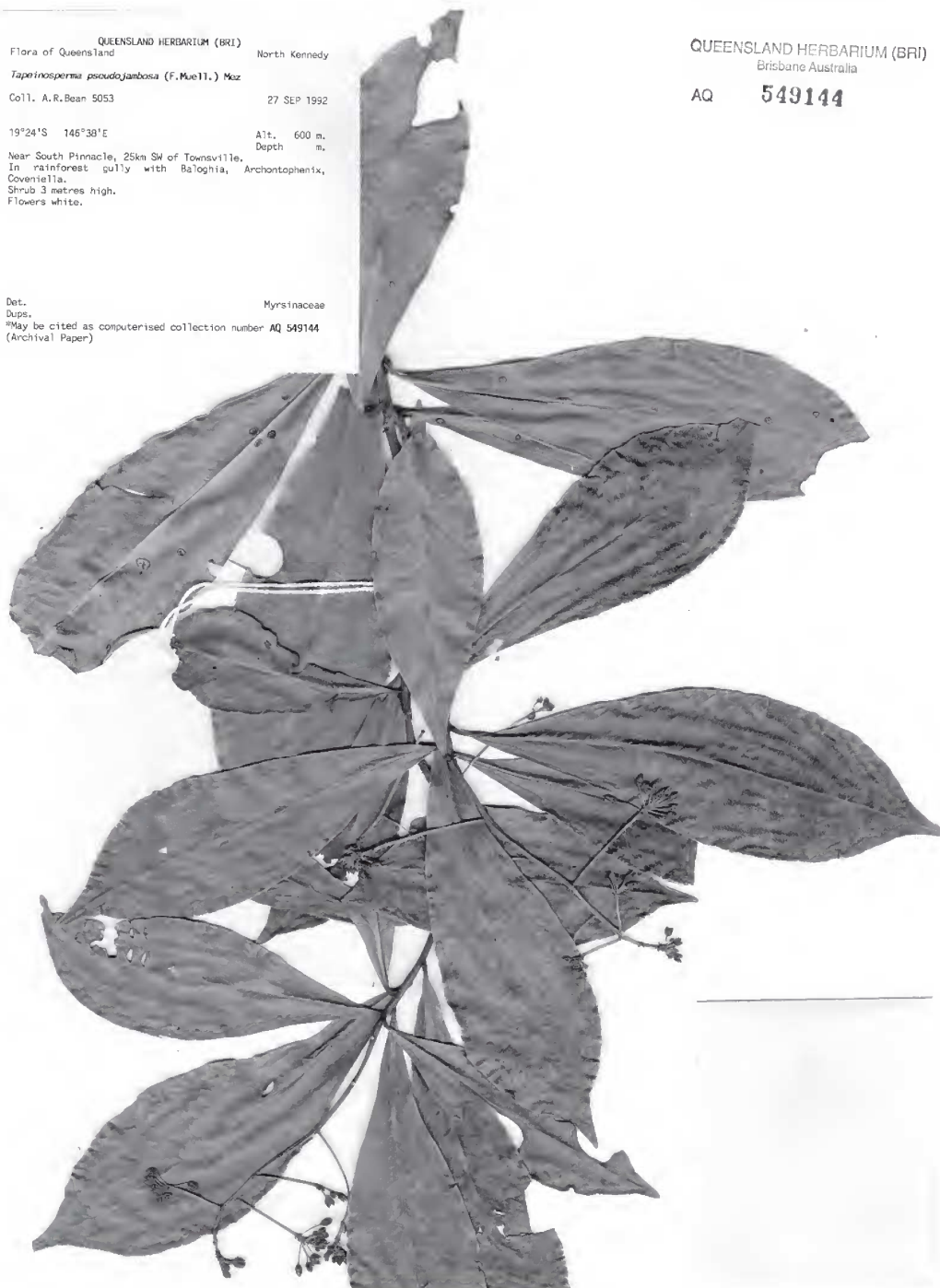


Fig. 3. *Tapeinosperma pseudojambosa*. Scan of Bean 5053 (BRI).

glossy, abaxial surface paler, chartaceous; apex acuminate, base cuneate, margins undulate, irregularly serrulate to crenulate; midrib depressed on adaxial surface, prominent on abaxial surface, 15–25 lateral veins on either side of the midrib, looping towards the margin. Glands *c.* 2–6 per areole in areoles lacking veinlets, up to 10 in an areole with veinlets; globular to shortly lineate, length:width ratio \leq 2:1, pellucid. Panicle, 2–8 cm long, 2–3 cm wide, 3–5 primary branches, the subtending bracts small, caducous. Pedicels 3–9 mm long, with dark-coloured lineate glands, elongating and curving as fruit matures; subtending bracts chartaceous *c.* 1 mm long with dark-coloured lineate glands. Flowers *c.* 3 mm long. Calyx cupuliform, tube *c.* 0.75 mm long, lobes triangular *c.* 0.75 mm long, 0.5 mm wide at base, dark-coloured glands present. Corolla urceolate, cream margins with dark to black centre, tube 1.5 mm long, lobes *c.* 1.5 mm long, glands pellucid towards the margins with dark-coloured chiefly lineate glands concentrated into the median area of the lobes, drying black. Stamens: filaments ligulate, 1 mm long, anthers 2 mm long deltoid, apiculate, dark-coloured glands usually present in apex, glandular papillae pale. Ovary globose, *c.* 1 mm diam., pale capitate scales present, style at anthesis 2.5–3 mm long elongating as fruit develops, dark glands present, stigma punctiform. Ovules 4 or 5. Fruit depressed-globular, 6–7 mm long, 8 mm diam., dark pink to red. **Fig. 4, 5C, 6C.**

Additional specimens examined: **Queensland.** WIDE BAY DISTRICT: Kin Kin, Mar 1916, *Francis & White s.n.* (BRI [AQ91810], NSW26760); Kin Kin, Dec 1919, *Francis s.n.* (BRI [AQ91812]); Between compartments 1 and 2, Mothar L.A., S.F. 393 Woodum, *c.* 15 km SE of Gympie, 16° 15'S, 152° 49'E, Jan 1989, *McDonald 4262* (BISH, BRI, MO, NSW); East Cedar Creek *c.* 7 km N of Mapleton, 26° 33'S, 152° 52'E, Jan 1990, *Sharpe 4934 & Thomas* (BRI); Near Gympie-Imbil, 26° 20'S, 152° 40'E, Oct 1982, *Williams s.n.* (NSW259576, UNE). MORETON DISTRICT: Brolga Park, beside Dulong road, W of Woombye, 26° 39'S, 152° 54'E, Jan 1989, *Bean 994* (BRI); Brolga Park, 6 km W of Woombye, 26° 39'S, 152° 54'S, Dec 1989, *Forster PIF6148, Bean & Tucker* (BRI); *c.* 0.6 km SE of Mt Wagawn, 28° 15'S, 153° 13'E, Feb 1986, *Guymer 2109* (BRI); Landsborough, *Shirley s.n.* (BRI [AQ91822]); Yandina, Mar 1891, *Simmonds s.n.* (BRI [AQ912821]); Eudlo, Nov 1891, *Simmonds s.n.* (BRI [AQ91582]); Mooloolah Scrubs, Dec 1890, *Unknown* (BRI [AQ91818]); Maroochie, Mar 1891, *Unknown* (BRI [AQ91829]); Eumundi, May 1892, *Unknown* (BRI [AQ91813]); Eudlo Scrubs, Nov 1896, *Unknown* (BRI [AQ91825]). **New South Wales.** NORTH COAST DISTRICT: Couchy Creek, below Sphinx Lookout,

Springbrook, May 1977, *Floyd 351* (BRI, CANB, NSW); Richmond River, *Hodge s.n.* (MEL1612772); Oxley River, *c.* 12 km NW of Tyalgum, 28° 15'S, 153° 10'E, Jun 1986, *Williams & Bird 86005* (BRI).

Distribution and habitat: This species is found along streams and in subtropical rainforest areas, often in very moist habitats within these forests. It has been collected from the Gympie area (*c.* 26°S) south to the northern rivers area of New South Wales (*c.* 28°S) (**Map 1**). Substrate varies from rhyolite to volcanic derived soils and it has been found at altitudes ranging from 80 to 700 m.

Phenology: Flowers have been collected in summer and early autumn, while fruits have been collected throughout the year but chiefly from May to July.

Notes: *Tapeinosperma repandulum* is a typical understorey species readily distinguished from the other species by the distribution of the dark-coloured glands in the corolla that are concentrated in the centre of the corolla lobes, with pellucid glands towards the margins. Vegetatively it is the only species with lineate pellucid glands rarely exceeding a length:width ratio equal to or less than 2:1.

Etymology: From the Latin *repandus* - margin is wavy or somewhat uneven, referring to the margin of the leaf lamina.

Excluded species

Tapeinosperma flückigeri (F.Muell.) Mez in Engler, *Pflanzenr.* 1(IV:326):171 (1902) = *Embelia flückigeri* F.Muell. *Vict. Nat.* 8:200 (1892).

Type: Queensland. COOK DISTRICT: Russell River, *S. Johnson s.n.* (holo: MEL1612758; iso: K).

Known only from the type collection and presumed extinct. All existing specimens seen were of poor quality. Additional material is required to confirm placement.

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Fig. 4. *Tapeinosperma repandulum*. Scan of Francis [AQ91812] (BRI).

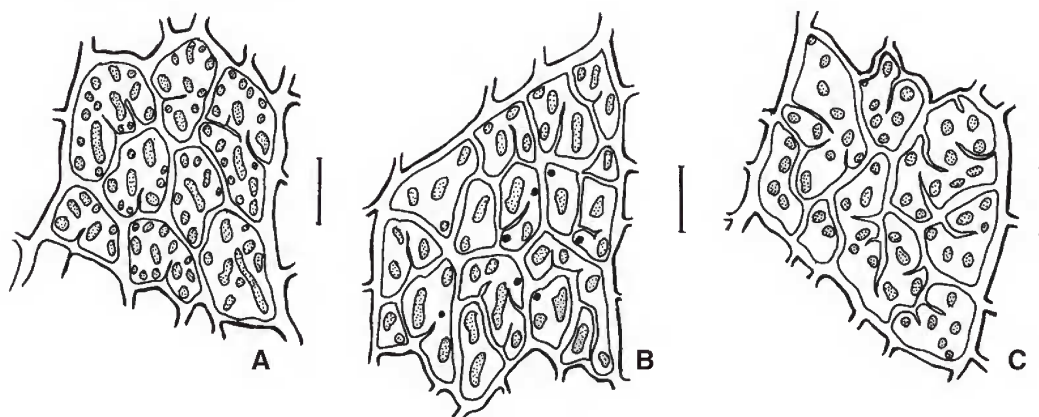


Fig 5. A. portion of leaves (mid section) showing the pattern of distribution of glands within the areoles, stippled glands are pellucid or orange coloured, solid glands are small globular red to dark red glands. A. *Tapeinosperma pallidum* (from *Dallachy s.n.* (MEL612793); B. *T. pseudojambosa* (from *Clemens s.n.* (BRI [AQ 91827]); C. *T. repandulum* (from *Moore 212* (MEL)). Scale bar = 1 mm.

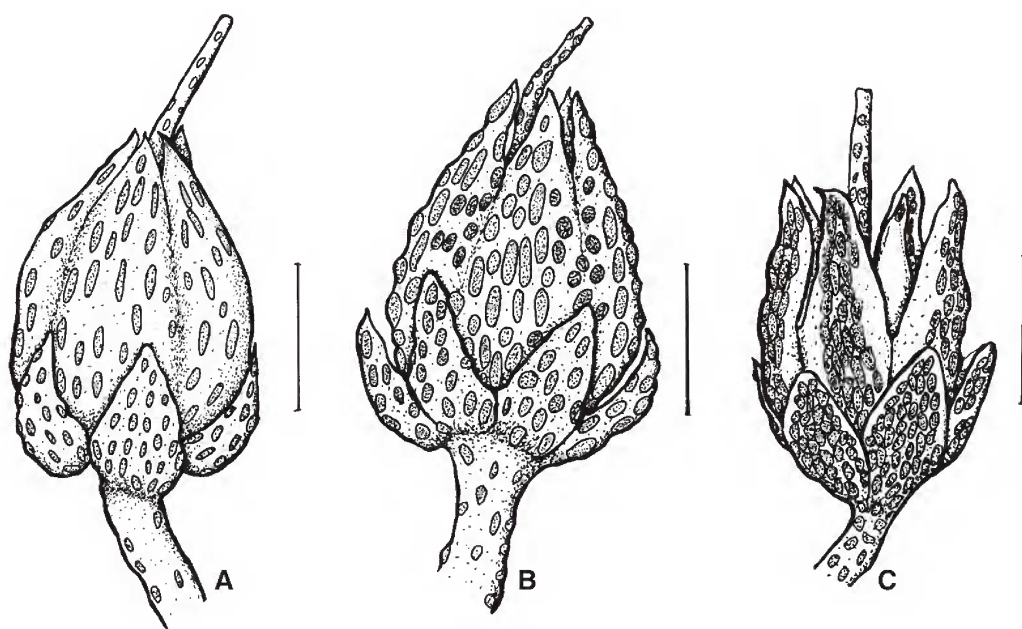
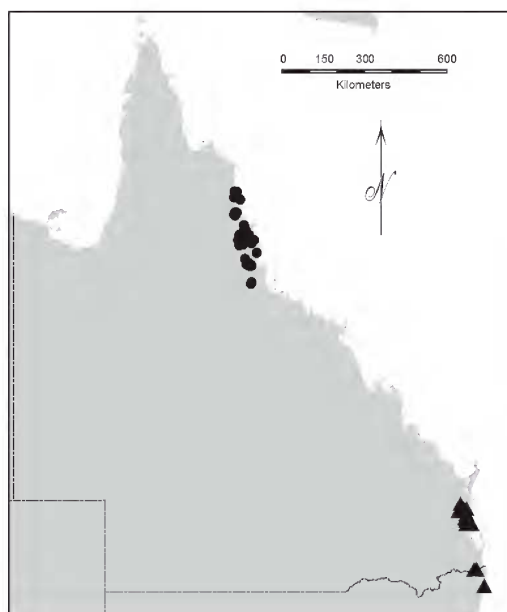


Fig. 6. *Tapeinosperma pallidum*. A. flower. *T. pseudojambosa* B. flower. *T. repandulum* C. flower. Lightly stippled glands are pellucid. Scale bar = 1mm. A from *Cooper and Cooper 1172* (QRS); B from *McDonald 5748 & Tweedie* (BRI); C from *Francis s.n.* (BRI [AQ 91812]).

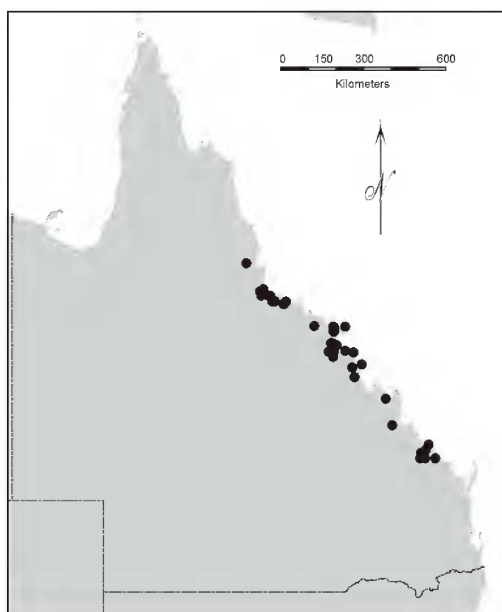
Latin diagnosis and to Adella Edwards for preparing the maps and scanning specimens.

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Map 1. Distribution of *Tapeinosperma pallidum* ● and *T. repandulum* ▲.



Map 2. Distribution of *Tapeinosperma pseudojambosa* ●.